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Economic importance of diatoms.—MANN⁹ gives an interesting discussion of the uses of diatoms. Among these he enumerates the use of fossil diatoms as abrasives in polishing powders, tooth powders, etc. They have also been used as a food adulterant by mixing with flour, thus increasing the bulk of food but adding nothing to its nutritive value. They were used in this way by the "Earth Eaters." A later similar use was as an adulterant of candy, but this use is now prohibited by law. They were also formerly used as an absorbent of nitro-glycerine in the manufacture of dynamite. There are beds of diatomite several hundred feet thick on the Pacific coast, and the use of them as a substitute for asbestos in packing steam pipes, as filler for refrigerators, and in the manufacture of pottery is increasing. Another new use in medicine is as a filter for serums. It is suggested that their beautiful designs be used as patterns in the ornamentation of jewelry, wall paper, etc.

Since diatoms store their food in the form of oil instead of starch, it is believed that they have been one of the sources of petroleum. On account of their being so minute that living ones may be carried great distances in the ocean, they may be of use in determining the direction of ocean currents. One argument that supports NANSEN'S theory that there is a current passing northward from Behring Strait across the north polar regions and down the coast of Greenland and Norway is that the diatoms of these localities are of similar species. Perhaps the one use that is of supreme importance is the furnishing of food either directly or indirectly for aquatic animals. Diatoms are chlorophyll-bearing plants, and are the greatest agency in the water for changing inorganic into organic matter, hence a knowledge of diatoms is fundamental to a study of the food supply of fish and other aquatic animals. Animal life is very abundant on the shores of the Antarctic continent, and in that region there is very little land vegetation. The greater part of the food for all of these animals is supplied originally by the diatoms.

The statement that EHRENBURG estimated the number of individuals in a cubic inch of diatomite at 40,000,000 should be 40,000,000,000. The statement is made that diatoms are so minute that 100 of them could be placed on the head of a pin. This is well within the facts, for that number of the smallest could find room on the point of a pin. The use mentioned of the diatoms *Pleurosigma angulatum* and *Amphipleura pellucida* as test objects for microscope objectives has been discontinued. The Bausch and Lomb Company state that the "Abbe test plate" is now used entirely and is more accurate and reliable.—C. J. ELMORE.

Addisonia.—The second number of the second volume of this finely illustrated series, issued June 30, contains colored plates and popular descriptions of *Solidago juncea*, *Echeveria multicaulis*, *Catasetum viridiflavum*, *Sagittaria latifolia*, *Baccharis halimifolia*, *Xanthisma texanum*, *Secum Bourgaei*, *Cimicifuga simplex*, *Feijoa Sellowianus*, and *Aster amethystinus*.

⁹ MANN, ALBERT, The economic importance of the diatoms. Smiths. Rep. 1916: 377-386. pls. 1-3. 1917.

The first number of the third volume of this journal, published by the New York Botanical Garden, contains colored plates and popular descriptions of *Anonia atropurpurea* (Eastern North America), *Aster novaeangliae* (United States and Canada), *Gymnocalycium multiflorum* and *G. Mostii* (Argentina), *Euonymus alata* (Eastern Asia), *Diospyros virginiana* (Eastern United States), *Lepadena marginata* (Central and Western United States), *Maackia amurensis Buergeri* (Japan), *Hibiscus oculirosus* (Eastern United States), *Cornus officinalis* (Japan), *Opuntia lasiacantha* (Mexico).—J. M. C.

Morphology of wheat.—JENSEN¹⁰ has investigated certain strains of wheat and the result is perhaps our fullest account of the morphology of this important plant. The subjects considered are development of spike and flower, of microspore and male gametophyte, of megaspore and female gametophyte, fertilization and development of embryo, and endosperm. An interesting record is that fertilization occurred from 32 to 40 hours after pollination.—J. M. C.

Intrafascicular cambium in monocotyledons.—Mrs. ARBER¹¹ has added to her previous observations¹² of intrafascicular cambium in monocotyledons other observations which include Araceae, Dioscoreaceae, Iridaceae, and Potamogetonaceae. Such cambium is now known to occur in "all but two of the cohorts into which ENGLER divides the monocotyledons; the exceptions are the Triuridales and the Synanthae."—J. M. C.

Seed position and growth.—It has been found that bean seeds planted with the eye up give a somewhat lower degree of germination and growth than when the seed lies flat or is placed eye down.¹³ This seems to show that the common practice of dropping seeds flat upon the soil when planting gives results that are satisfactory.—GEO. D. FULLER.

¹⁰ JENSEN, G. H., Studies on the morphology of wheat. Bull. 150, State Coll. Washington. pp. 21. pls. 5. 1918.

¹¹ ARBER, AGNES, Further notes on intrafascicular cambium in monocotyledons. Ann. Botany 32:87-89. figs. 4. 1918.

¹² BOT. GAZ. 64:350. 1917.

¹³ HALSTED, B. D., and OWEN, E. J., Environment of seeds and crop production. Plant World 20:294-297. 1917.